Scholars Academic Journal of Biosciences (SAJB) **ISSN 2321-6883 (Online)**
Sch. Acad. J. Biosci., 2015; 3(3):294-300 **ISSN 2347-9515 (Print)**

(An International Publisher for Academic and Scientific Resources)
www.saspublishers.com **DOI :** 10.36347/sajb.2015.v03i03.010

Research Article

Indigenous Food Plants of Kubau Tribe in Kaduna State, Nigeria

MacDonald Idu*, Tukur Hafsat Muhammad
Department of Biological Sciences, University of Abuja, FCT Abuja Nigeria.

***Corresponding author**
MacDonald Idu
Email: mcdonald.idu@gmail.com

Abstract: The present survey looks at the food plants and related practices that forms the indigenous knowledge of the Kubautribals of Kubau Local Government Area, Kaduna State, Nigeria. Fifty knowledgeable tribals with traditional local knowledge (TLK) were interviewed by means of open and semi-structured ethno-botanical interviews. For each plants species mentioned, botanical family, local names, plant parts used, and medicinal uses in their season, were recorded. A total of 35 species of plants belonging to 18 botanical families of which Fabaceae (7 species) and Poaceae (5 species) were the most observed. Grains, nuts and seeds (12 species), leaves (9 species), corms, tubers and fruits (14 species) were consumed in raw or cooked form by the tribals.The present survey, documents the significant component of the economic life of the locals, whereas, these plants are revaluated today because they are perceived as healthy and also because they represent the preservation of biodiversity and a way of getting back to nature.
Keywords: Ethnobotany, food plants, Kubautribe, Kaduna state, Nigeria

INTRODUCTION

Food from the natural environment which became included into the cultural food use patterns of a group of indigenous people are known as indigenous foods. There is a great diversity of cultural ecosystems that sustained Kubau indigenous people throughout history, and hence there is great variety of indigenous foods that are part of our collective human knowledge [1].

Indigenous foods can be categorized as plants food, animal's food, earth elements such as salts and water. The tremendous diversity of plants food to and used by Kubau indigenous people, which is subject of this research, is an area deserving careful study and documentation. It is common that the collective wisdom of resource use in natural environments know to indigenous people is disappearing in the face of modernization and technological development" [2].

Generally, Kubau is an agricultural economy because of its abundant water (both rainy and dry seasons with fertile soil). About 90% of the populations are predominantly farmers and fishermen. Food crops such as tubers and cereals of different varieties and even cash crops such as groundnut, sugar cane, tomatoes are produced in all the nine (9) geopolitical districts of the government area, livestock production is among the thriving occupation of the people in the local government area, this is because of the land and the absence of tse-tse fly which creates conductive atmosphere for such activities.

The quality and variety of plant foods were balanced with quantity and quality of animal and fish foods utilized to make nutritionally complete dietary patterns. The contribution of local food plants to reducing health risks has always been recognized as part of the local knowledge which forms greater part of the complex cultural system.

MATERIALS AND METHODS

A field survey of the different food plants was done by means of entry into the nine geopolitical districts in the local government area. The plant food was photographed for easy identification and naming.

Study Area

Kubau Local Government Area is one of the twenty three (23) LGA of Kaduna state, (Fig. 1 and 2) it lies between latitude $10^0 35'$ and $11^0 13'$ North of the equator and longitude $18^0 02$ to $8^0 13$ east of the prime meridian, it has a total landmass of 2,505km^2 with a population of approximately 382,045 people.

The local government area is bounded to the North by Ikara Local Government Area, to the east by Kano State, to the south-east by Lere Local Government Area and to the west by Soba Local Government Area. The Local Government Area comprises of nine (9) geopolitical districts namely; Anchau, Damau, Dutseu-wai, Gadas, Haskiya, Kargi, Kubau, Pambegua and Zuntu.

Kubau LGA is situated in the tropical region with savannah type of climate, characterized by two (2) seasons, the wet and dry seasons between mid-April to October, it experiences wet season while November to April, it experiences little or no rainfall with harmattan. The monthly climate averages provide a yearly high/low temperature with annual rainfall of 29 mm, the highest mean monthly rainfall is in July with almost 123 mm, while mean maximum annual temperature is 35^0C in the area.

Kubau LGA is located on the high plains of Northern Nigeria; the state is underlined by purely basement complex rocks which cover the great part of Nigeria, Kubau is characterized above the surrounding land with local relief of less than 300 m, "Dutsen-wai" hill has an elevation of 13 km and the "pambegua" hill has an elevation of 26 km.

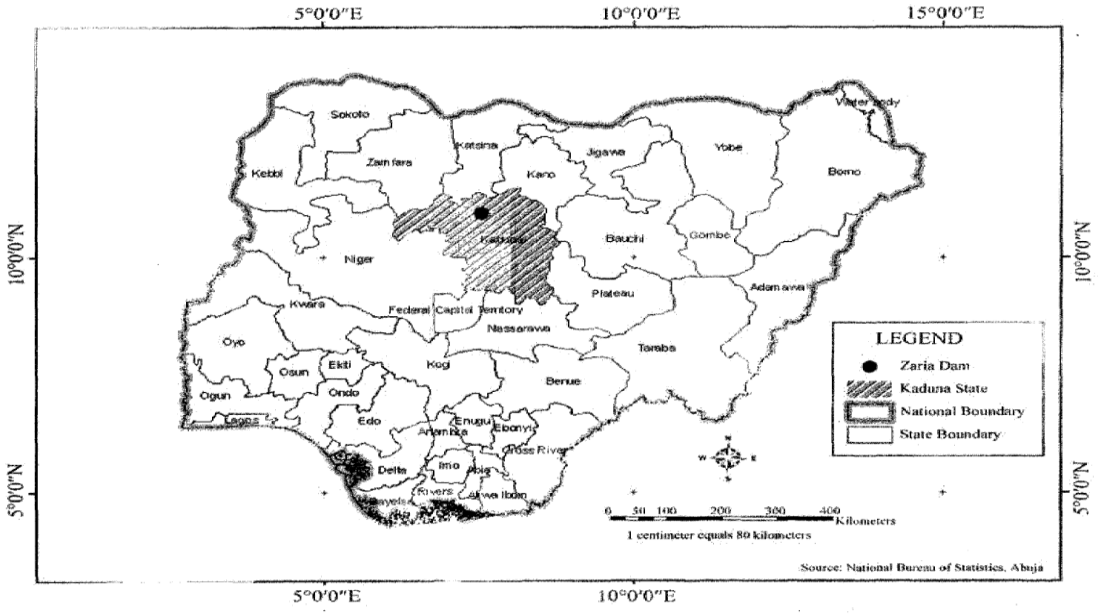

Fig1:Map of Nigeria showing Kaduna State

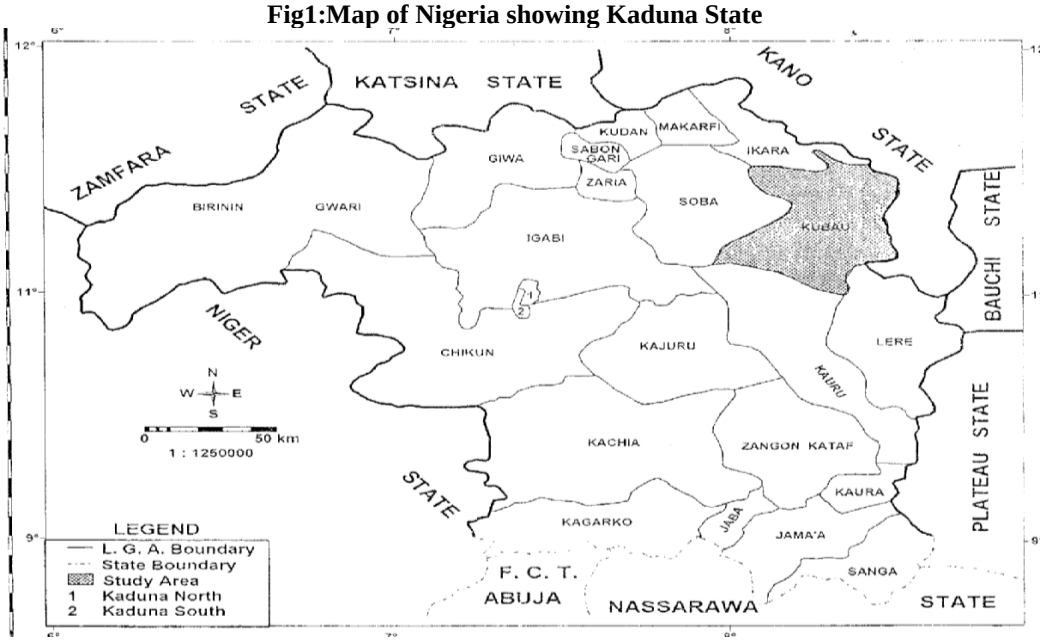

Fig 2: Map of Kaduna State showing Kubau Local Government Area

Methods of data collection

The interviewing of elders, gathered male and females of different age groups and occupation who were capable of giving accurate information to the researcher were the major informants. They were initiated with the aims and objectives of the research and their cooperation sought and obtained.

A focus group guide was developed during discussion with the different groups, issues raised for discussion were based on the following topics; foods that are produced and consumed in the communities, season and patterns of food harvest, method of preparation of local foods, social and medicinal uses of

foods, social, foods that are eaten and liked by season, foods that are minimally used or currently not in use and reason for their disuse etc.

Questionnaires were distributed to 50 households/market survey in the locality, information was collected on the following:

i. Free list of community traditional foods, their local names and frequency of use.
ii. Taste appreciation of some traditional foods by children, mother fathers and elders
iii. Attribute attached to traditional foods etc.

Data analysis

Information and data collected from informants and focus group discussants of the indigenous food plants were subjected to simple percentage analysis.

RESULTS

Fifty people, 29 women (58%) and 21 men (42%) were interviewed. Nine informants were young, 29 were older (Table 1). The result showed that traditional local knowledge was almost equally shared between the two genders, however, the women had a better preserved memory of it probably because the processing and cooking of food plants were almost exclusively done by them while gathering activities were carried out by both genders (Table 1).

The informants mentioned a total of 35 food plants, including green leafy plants eaten as vegetables, fruits and roots. Plants used for making liqueurs (in particular digestive liqueurs) were also taken into consideration, because these are traditionally drunk at the end of a meal (Table 2).

The plant species mentioned by the people interviewed in the present study belonged to 18 different botanical families (Table 3). The most representative families were Fabaceae (7 plants), Poaceae (5 Plants) and Solanaceae (5 Plants).

The parts of the plants used and recorded for each mentioned species are represented in Figure 3. In general, trees were most frequently used followed by shrubs.

The ways of consumption of food plants and the number of species in each category are shown in Figure 4. Cereals were most often consumed cooked, condiments and flavoring are also frequently used followed by legumes and vegetables in salads prepared with the tender young leaves. Some plants food were eaten raw (fruits and roots) as a rural snack by kids and collecting them was often experienced as competing game.

Table 1: Data analysis

S/N	Demographic information	Frequency (n=50)	Percentage %
1	Gender		
	Male	21	42
	Female	29	58
2	Age categories		
	15-25	9	18
	26-35	29	58
	36-45	7	14
	46-55	3	6
	56-65	2	4
	66-75	0	0
	75 above	0	0
3	Level of education		
	No formal	15	30
	Primary	21	42
	Secondary	6	12
	Diploma/NCE	5	10
	Degree	3	6
4	Main occupation		
	Fishermen	11	22
	Farmers	30	60
	Civil servants	7	14
	Herbalist	2	4

Table 2: Traditional food plants of kubau tribe, Kaduna state.

S/no	Botanical Name	Botanical Family	Local Name	Parts of the plant used	Culinary usage	Seasonality	
						R	D
1	*Abelmoschusesculentus*	Malvaceae	Kubewa	Fruits	Pasta stuffing	✓	
2	*Adansoniadigitata*	Bombacaceae	Kuka	Leaves, Fruits	Fresh fruits, Sauce	✓	
3	*Amaranthushybridus*	Amaranthaceae	Allayyahu	Leaves	Fresh fruits, Salad	✓	
4	*Arachis hypogea*	Fabaceae	Gyada	Nuts	Rural snack	✓	
5	*Borassusaethiopum*	Arecaceae	Giginya	Fruits, Sprout	Rural Snack		✓
6	*Capsicum annum (Bell var.)*	Solanaceae	Attarugu	Fruit	Flavouring, Spices	✓	
7	*Capsicum annum*	Solanaceae	Shambo/Barkono	Fruit	Flavouring, Spices	✓	
8	*Capsicum frutenscens*	Solanaceae	Tashi	Fruits	Flavouring	✓	
9	*Ceratothecasesamoides*	Pedaliaceae	Kalkashi	Leaves	Mixed vegetable		✓
10	*Colocasia esculenta*	Araceae	Gwaza/Walakan	Swollen roots	Rural Snack	✓	
11	*Curcubita maxima*	Curcubitaceae	Kabewa	Pulpy fruit	Fresh fruit, pasta stuffing	✓	
12	*Glycine max*	Fabaceae	Wakken soya	Seeds	Salad, pan fried	✓	
13	*Hibiscus cannabinus*	Malvaceae	Rama	Leaves, flowers	Mixed vegetable, salad		✓
14	*Hibiscus sabdariffa*	Malvaceae	Yakuwa	Leaves, flowers	Mixed vegetable, liqueurs		✓
15	*Ipomeabatatas*	Dankalinhausa	Leaves, swollen roots	Rural snack, mixed vegetable			✓
16	*Isoberliniadoka*	Fabaceae	Masara	Processed grain chaff	Staple, pasta stuffing		✓
17	*Lycopersiconesculentum*	Solanaceae	Tumatur	Fruit (berry)	Fresh fruit, salad	✓	
18	*Mangiferaindica*	Anacardiaceae	Mangwaro	Fruits	Fresh fruit		✓
19	*Manihotesculanta*	Euphorbiaceae	Rogo	Swollen root	Rural snack	✓	✓
20	*Moringaoleifera*	Moringaceae	Zogale	Whole plant	Salad, mixed vegetable	✓	✓
21	*Musa sapientum, M. nana*	Musaceae	Ayaba	Fruits	Flavouring	✓	✓
22	*Oryza sativa*	Poaceae	Shinkafa	Processed grain chaff	Pasta stuffing	✓	✓
23	*Parkiabiglobosa*	Fabaceae	Dorawa	Fruits	Flavouring		✓
24	*Pennisetumglaucum*	Poaceae	Gero/Dauro	Processed grain chaff	Staple, liqueurs	✓	
25	*Saccharumofficinarum*	Poaceae	Rake	Stems	Liqueurs, swet cane	✓	
26	*Solanumindicum*	Solanaceae	GautanDaci/Data	Fruits, leaves	Fresh fruit, pasta stuffing	✓	
27	*Sorghum bicolor*	Poaceae	Dawa	Processed grain chaff	Staple	✓	
28	*Tamarindusindica*	Caesalpiniaceae	Tsamiya	Leaves, fruit	Liqueur, flavouring		✓
29	*Vernoniaamygdalina*	Asteraceae	Shuwaka	Leaves	Mixed vegetable	✓	
30	*Vigna unguiculata*	Fabaceae	Wake	Seeds	Salad, pan fried		✓
31	*Vigna subterranean*	Fabaceae	Gurjiya/Kwaroro	Seeds	Salad, pan fried	✓	
32	*Vitelleriaparadoxa*	Sapotaceae	Kade	Fruits, seeds	Rural snack		✓
33	*Vitex doniana*	Verbanaceae	Dinya	Fruits	Fresh fruit		✓
34	*Ximenia aculeate*	Olaceae	Tsada	Fruits	Fresh fruit		✓
35	*Zea mays*	Poaceae	Masara	Processed grain chaff	Staple, pasta stuffiinf	✓	

R = Rainy, D = Dry

Table 3: Botanical families of food plants consumed by the kubau people

S/N	Botanical families	Number of food plant species
1	Fabaceae	7
2	Poaceae	5
3	Solanaceae	5
4	Malvaceae	4
5	Sapotaceae	1
6	Convolvulaceae	1
7	Araceae	1
8	Asteraceae	1
9	Aamranthaceae	1
10	Cucurbitaceae	1
11	Euphorbiaceae	1
12	Pediliaceae	1
13	Verbenaceae	1
14	Olacaceae	1
15	Arecaceae	1
16	Musaceae	1
17	Anacardiaceae	1
18	Moringaceae	1

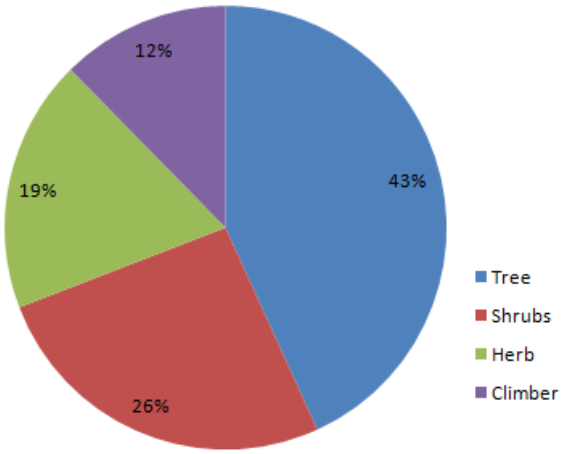

Fig 3: Chart showing the distribution of plant forms

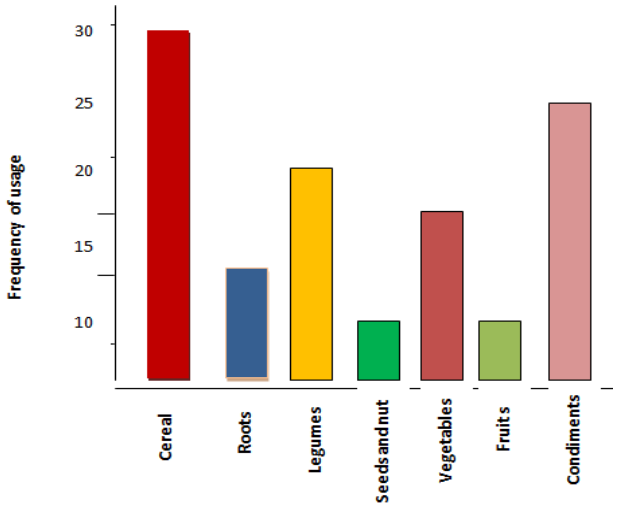

Fig. 4: Chart showing the frequency of usage in relation food groups

DISCUSSION

The outcome of the present study reveals that 35 plants species were used for food purpose in the surveyed area. The inventories species comprises of 18 families the most important families were Fabaceae, Poaceae, Solanaceae and Malvaceae. This agreed with the findings of [3] who identified 25 plants in Kaduna State. Also, [4] identified 61 species of Savanna plants visited by Honey bee. While [5] and also [6] identified 26 and 28 species respectively from the Guinea savanna zone in North Central part of Nigeria.

Among the reported 35 species, 12 were recorded for grains and seed, 9 for leaves and 14 plants were recorded for fruits, tubers, corns, and flowers etc. some of these are very useful to the local population for melting their subsistence consumption need while other is of commercial importance. Indigenous food plants are important and can provide food nutrients that are essential to the body. The rural population can sell products from food plants to urban areas for income generation. The food plants with their products can cheaply be preserved to ensure food security during times of famine.

Kayode and Ogunleye[3] showed that the most widely utilized parts in terms of the diversity of botanicals are the fruits, seeds and flowers while the least utilized part is the rhizome in Kaduna state, perhaps the most widely utilized plant species in Nigeria is the spices. These spices are the major source of powder and/or seeds used in cooking and have strong

taste and smell [7]. Apart from their nutritional and medicinal importance, the spices like other non-timber products have significant potentials in terms of employment opportunity [8]. However, findings of the present study reflected the immense untapped nutritional capacity of these food plants. Their domestication, especially those with commercial value, is important for nutrition security.

Varieties of leaves, fruits, seeds and nuts, tubers and corns were collected in different seasons, eaten in raw or cooked forms. Out of 35 identified food plants, 21 are popular among tribes and eaten frequently in different seasons. Among these, Rama (from *Hibiscus cannabinus*), Yakuwa (from *Hibiscus sabdariffa*) Shuwaka (from *Vernoniaamygdalina*) and Allayyahu (from *Amarantushybridus*) are cooked and eaten as vegetables while others are eaten ripe, raw or processed and eaten as food. During food scarcity the seasonal seeds and nuts becomes a major part of diet, sometimes seed are eaten raw or roasted. In the present study most of the identified tubers belongs to the families' Convolvulaceae, Araceae and Euphorbiaceae some tubers are boiled and eaten while some are cut, dried and made into flour.

Influence of Age and Gender on Knowledge of Respondents on Wild Edible Plant Species

This demonstrates that knowledge held is directly related to the responsibilities assigned to or performed by an individual in the community. For instance, from Table 1, adult females were knowledgeable on plants that are cooked while the adult males were knowledgeable on those that are eaten as snacks. This shows that adult females are responsible for cooking in the families while the males who spend most of the time with grazing animals, hunting are familiar with snacks. Children's knowledge also differed significantly from that of adult females.

Local Knowledge of Food Plants

Among the plant families, most often cited, the Fabaceae and Poaceae are the most prominent (Table 3).Information regarding the potential productivity and palatability value of these twofamilies are abundant, and they are characterized as having high nutritional potential in most part of the world [9].

Research carried out in traditional communities in underdeveloped countries[10], discloses a scenario similar to that found in this study regarding the high dependence on food plants in the maintenance of tribal's as well as emphasizing the importance of local knowledge as a link in the process of the selection of potential plants for a program of sustainable management and conservation of biodiversity.

Plant Parts Consumed

The major plant parts consumed in KubauLGA, Kaduna state, are shown in Fig 3. Trees were the major parts consumed. In Balumogi country of Uganda, in Nhema communal area, Zimbabwe and around Kibale national park (Uganda), a similar trend was reported [11]. The major determining factor is the amount of effort (labour) required in preparing them. However, during the focus group discussions, respondents mentioned that some seeds are actually eaten together with the fruits for instance *Capsicum annum, Capsicum frutescens*. This is because the fruits are small in size and removing seeds may damage the whole fruit and they do not pose any danger to the consumer.

Modes of Consumption

Figure 4 showed the frequency of use in relation to food group. Cereals are used in many food form when compared to other types. The other modes of consumption are"non-cooked" eating in the form of snacks. The popular species in this category include among others,*Mangiferaindica, Saccharumofficinarum,* and *Vitexdoniana*. Uncooked eating as snacks arises because of hours spent away from home or carried and eaten at home. The majority of such items are eaten instantly from collection areas such as grazing land, farmland and road sides. Plants such as *Tamarindusindica*and *Adansoniadigitata*fruits can be locally processed and drunk as juice singly or in combination with other foods such as cooked sweet potatoes. In Nhema communal area of Zimbabwe and Derashe and Kacha districts of South Ethiopia, high consumption of this form of snacks is attributable to easiness of processing, perceived high nutritional value and the desirable taste[11-12].

Modes of Preparation

The plants that require cooking undergo some kind of preparation. *Borassusaethiopum, Tamarindusindica*and *Adansoniadigitata*that are eaten as snack require specialized preparation. For instance; the fruits of *Borassusaethiopum*are collected, taken to a nearby hard surface (such as rock or road) and hit on the ground several times until it softens and cracks appear, the fruits are then wasted and ready to eating. For*Adansoniadigitata*, residents summarized the process as follows: Cut the branch, hand pick the leaves, wash, pound in a mortar with pestle then boiled. Groundnut paste are added without salt and the sauce eaten while warm to prevent hardening.

Conservation Measures

The conservation measures recorded in Kubau LGA include agro-forestry; trees around homesteads, schools, mosque and churches, protection from fire and regulation of cutting. It has been widely reported that when people reportedly exploit a species in various ways, the value of that species will be reinforced [13-14]. Therefore, the social and economic benefits of species generated community interest in them leading to their conservation [15].

CONCLUSION

We have identified 35 types of food plants, which are integral parts of the tribal diet. Many of this food can be exploited to meet the food and nutrition security of the nation. This research can provide a wealth of information regarding both past and present relationship between plants and traditional research on indigenous foods. By knowing the plants usefulness to indigenous people, temporal and longitudinal studies can demonstrate environmental integrity or lack of it. Thevalue of this research therefore, is to help bring recognition to the great variety of potentially useful plant foods that exist, and to stimulate research and further documentation on nutritional, botanical properties and use of plants by the Kubau indigenous people.

REFERENCES

1. Okafor JC ; 1979. Edibleindigenous woody plants in the rural economy of the Nigerian Forest zone. In D.U. Okali (Ed) The Nigerian Forest Ecosystem, Nigeria: Proceedings of workshop in Nigerian Rainforest Ecosystem, University of Ibadan. 1979.
2. FAO ;Provision indicative world plan for Agricultural development. Vol. 2. F.A.O. of the United Nations Rome. 1990.
3. Kayode J, Ogunleye TO; Private participation in Taungya Agroforestry in Ondo-EkitiRegion: Problems and prospects. Int. J. of Urban and Regional Affairs. 2008. 1: 54-57.
4. Dukku UH; *Acacia ataxacantha*: A nectar plant for honeybees between two dearth periods in the Sudan Savanna of Northern Nigeria. Bee World. 2013. 84**:**32-34.
5. Ebenezer IO, Olugbenga MT; Pollen characterization of honey samples from NorthCentral Nigeria.J. Biol., 2010. 10: 43 – 47.
6. Mbah CE, Amao AO; Natural foods and feeding habits of the African honey bee *Apisadansonii* Latrielle(1804) in Zaria, Northern Nigeria. Sci. World J., 2009. 4:11-14.
7. Schippers RR; African indigenous vegetables: An overview of cultivated species. Natural Resources Institute/ACP/E Technical Centre for Agricultural and Rural Cooperation, Chatham, UK, 2000.
8. Soladoye MO, Sonibare MA; Non-timber forest products of old Oyo National Parkand their Sustainability. Nig. J. Bot**.,** 2003.16: 16-32.
9. Voeks RA; Are women reservoirs of traditional plant knowledge? Gender, ethnobotany and globalization in Northeast Brazil. Singapore J Trop Georgr., 2007.28: 7-20.
10. Chettri N, Sharma E; A Scientific assessment of traditional knowledge on firewood and fodder values in Sikkim. India for Ecol Manage., 2009. 257:2073-8.
11. Maroyi A; The gathering and Consumption of Wild Edible Plants in Nhema Communal Area, Midlands Province. Zimbabwe. Ecol. Food Nutr., 2011. 50: 506-525.
12. Balemie K, Kabebew F; Ethnobotanical study of edible wild plants in Derashe and Kucha districts, south Ethopia. J. Ethnobiol Ethnomed., 2006. 2:53-61.
13. FAO; The state of the Worlds Plant Genetic Resources for Food and Agriculture. Rome: 1998.
14. Etkin NL; The cull of the Wild. In: Eating on the Wild Side*:* The pharmacologic, Ecological and Social implications of using Non-cultigens. Tucson: University of Arizona Press. 1994.
15. Campbell BM. Clark JM., Gumbo J; Traditional Agroforestry Practices in Zimbabwe. Agro for. Syst., 1991.